CITY OF KNOXVILLE

Program Guide

Neighborhood Traffic Safety Program (NTSP)

http://www.knoxvilletn.gov/trafficsafety

August 15, 2017 Draft

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I. Introduction

The City of Knoxville's Neighborhood Traffic Safety Program (NTSP) reflects the City's commitment to the safety and livability of its residential neighborhoods. Under this program, the Traffic Engineering Division will work with the Fire Department, Police Department, Office of Neighborhoods, and residents to identify traffic problems in residential neighborhoods and seek appropriate solutions.

The goal of the NTSP is to promote safe and livable neighborhoods by reducing the negative impact of traffic in residential areas through Education, Enforcement, and Engineering. A livable neighborhood can be described as one in which residents enjoy the following:

- Ability to feel safe and secure when using the streets.
- Opportunity to interact with neighbors.
- Ability to experience a sense of home and privacy.
- A sense of community identification.

II. Program Overview

Experience in other cities has shown that traffic safety initiatives that are implemented without involving the neighborhood are frequently unsuccessful, and therefore citizen participation is a key component of this program.

The NTSP will involve one or more of the following elements in each neighborhood that applies for the program:

Education: Using information and tools supplied by the City, a neighborhood can engage in a neighborhood-centric, neighborhood-run campaign to make drivers, pedestrians and bicyclists more aware of speeding.

Enforcement: A police officer is dedicated to speed enforcement in four-hour blocks for two to four weeks at a time on a rotating basis.

Engineering: Depending on the individual neighborhood situation, the City makes route modifications or installs one or more traffic calming measures such as speed humps and neighborhood traffic circles.

Under the NTSP, street classification is a key consideration. Streets in Knoxville are classified in one of seven ways: local, minor collector, major collector, minor arterial, major arterial, expressway, and interstate. These classifications are determined by the Metropolitan Planning Commission as described in the Major Road Plan for the City of Knoxville and Knox County.

Local streets — those not listed in the Major Road Plan — are eligible to be considered for Engineering. Minor collectors located within residential neighborhoods may also be considered on a case by case basis.

Major collectors, minor arterials and major arterials are not eligible for Engineering under this program. (*There are a number of reasons for this limitation, as noted in the answer to question 1 in Appendix F, Frequently Asked Questions.)* Outside of the NTSP, neighborhoods may ask KPD to include major collectors and both minor and major arterials for enhanced enforcement. Moreover, neighborhoods also may wish to deploy certain Education components to address speeding on arterials and major collectors in neighborhoods.

Private residential streets, also known as Joint Private Easements, are not eligible for this program. Typically these are streets within gated neighborhoods.

Please Note: Due to staff and budget limitations, constraints in the physical environment, and other factors, the NTSP may be unable address some valid speeding concerns. Not all traffic concerns can be mitigated permanently by Education, Enforcement, Engineering, or any combination of the three.

III. Education

The Education component of the NTSP seeks to reduce speeding and other negative traffic impacts in a neighborhood by appealing to speeders to alter their behavior. The focus is on drivers who live in and/or regularly drive through the neighborhood.

The program depends primarily on the neighborhood organization and/or a group of concerned residents to manage their own neighborhood-centric campaign using information and tools provided by the City and other sources.

A **Traffic Safety Education Toolbox** is available for these campaigns. For more detail, see Appendix C.

- Basic Tools are available to neighborhoods at any time, whether or not they have applied for a Neighborhood Traffic Safety Study.
- Advanced Tools can be deployed in neighborhoods that have qualified for the development of a Concept Plan. Depending on availability, Advanced Tools may also be available to neighborhoods where a Traffic Safety Education Study was conducted.
- Due to limited funds, neighborhoods may be asked to pay one half of the cost of printing signs, bumper stickers, and brochures. However, low-income neighborhoods can request a waiver of this requirement.

IV. Enforcement

The Knoxville Police Department's Enhanced Neighborhood Speed Enforcement (ENSE) program (formerly known as "traffic calming") will continue to operate as a stand-alone program and will also be part of the NTSP.

Under KPD's program, off-duty police officers are dedicated to speed enforcement in four-hour blocks for two to four weeks at a time on a rotating basis (usually about three times per year).

Under the NTSP, KPD and the Traffic Engineering Division will work together to evaluate speeding in neighborhoods that have submitted a successful petition for a Neighborhood Traffic Safety Study. Data from patrol officers and counting devices (such as hoses in the street) will help determine if a neighborhood should be added to the ENSE program if it is not already on the list. (This same data also will help determine if a neighborhood qualifies for more in-depth study for possible traffic calming devices or route modifications.)

Based on officer availability, KPD may use its discretion to add or remove reported trouble spots from the rotation list. Random speed enforcement may then be applied to the area by on-duty patrol officers when feasible.

V. Engineering

If the City determines that Education and Enforcement would be ineffective in slowing the speed of vehicles on local streets, then Engineering will be considered. In this program, the term “Engineering” is used to describe both route modifications and physical traffic calming measures. (See Appendix D.)

Traffic calming is characterized as the combination of mainly physical measures that reduce the negative effects of motor vehicles, alter driver behavior, and improve conditions for non-motorized street users. It is the retrofitting of physical measures into the roadway to reduce traffic speeds. Traffic calming measures are intended to be self-enforcing.

Along with or in lieu of traffic calming treatments, Traffic Engineering may recommend route modifications as a way to reduce speeding in a residential neighborhood. Examples include partial street closures (passable to pedestrians and bicycles only) and making a street or a block one-way only.

Traffic calming treatments are typically the most expensive means of mitigation and have the most significant impact on residents. The implementation of any traffic calming treatment without local support can have significant backlash. It is for these reasons that the neighborhood must be fully engaged in the process, and that the City will implement traffic calming only when the evidence clearly shows such measures are the only effective means for reducing speeding that endangers public safety.

Engineering does not include certain measures that seem to be effective ways to slow traffic but in fact are not.

- Stop signs are NOT part of this program and are deemed ineffective and in some cases dangerous as a means of calming traffic and reducing speed.
- Lowering the speed limit to a point that is unenforceable or impractical is not good engineering or traffic calming practice.
- There is no evidence that Paint-the-Pavement projects reduce speeding, and the City does not wish to suggest otherwise. Separately, Engineering will consider requests for Paint-the-Pavement as placemaking projects.

Also, eliminating “cut-through” traffic is not a goal of this program. All roads in the city, including neighborhood streets, are public roads maintained by the City for the public’s use. Reduction of speeding is the program’s primary goal. Traffic calming measures may or may not reduce the appeal of a particular street or neighborhood for pass-through drivers.

VI. Steps toward Traffic Safety

The NTSP is a step-by-step process that starts with an inquiry from a Neighborhood and moves toward a solution involving Education, Enforcement, and/or Engineering.

> *In this document, “Neighborhood” is defined as either an established neighborhood organization registered with the City’s Office of Neighborhoods or a residential neighborhood with no neighborhood organization.*

A. Application for Traffic Safety Study

To start the process, a neighborhood organization or, if there is no active neighborhood organization, a group of three or more individual households may submit an Application requesting a Neighborhood Traffic Safety Study.

- Individuals within the boundaries of an established neighborhood organization may also wish to apply. However, such individuals will be asked to check with their neighborhood organization first. Before accepting the Application, the City will confer with the neighborhood organization to determine next steps.

- Due to street layouts and traffic patterns, there may be two or more sections of a single large neighborhood that can be treated as individual “neighborhoods” for the purpose of the NTSP. In such cases, it may not be possible or desirable to take all sections through the NTSP at the same time.

The Application, available on the City website or in hard copy form, will

- Identify the neighborhood and the area of concern (specific streets and/or sections of streets),
- Describe the perceived problem (e.g., excessive traffic speed),
- Note the times of day the problem occurs,
- Provide contact information for the resident who will serve as the liaison with the City and help coordinate meetings with the City, and
- Pledge that the Applicant will take responsibility for making sure that neighborhood residents are informed of any meetings with City officials.

The Application (see Appendix A) will list local streets (those not listed in the Major Road Plan) and/or minor collectors located within residential neighborhoods.

Neighborhoods that received traffic calming treatments prior to 2016 are not eligible to apply under NTSP until the third year of the program. These neighborhoods include

Cassell Drive, Crystal Lake Drive, Forest Glen, Forest Heights, Fourth and Gill, Hazelwood Road, Kingston Woods, North Hills, Old North Knoxville, Westwood, and Westmoreland Estates. However, these neighborhoods can take advantage of the basic tools of the Traffic Safety Education Toolbox (see Appendix C).

B. Kick-off Meeting

In response to the Application for a traffic safety study, City staff will coordinate with the Neighborhood to schedule a "Kick-off Meeting" between neighborhood residents and City staff.

Informing and involving neighbors is crucial to the success of this program, and the responsibility for this outreach falls on the Neighborhood. The City will encourage organizers to reach out to their neighbors and inform them of this and all subsequent meetings with the City. This outreach can best be accomplished with door-to-door visits and distribution of printed meeting announcements as well as email and social media.

At the meeting, the City will explain the NTSP, and neighbors will share their concerns and observations about speeding in the neighborhood.

The Office of Neighborhoods is available to help both neighborhood groups and neighbors in unorganized neighborhoods plan this meeting and any subsequent meetings. Contact David Massey at 215-3232 or dmassey@knoxvilletn.gov.

C. Neighborhood Petition

The Neighborhood will be asked to circulate a Petition to gather signatures in support of the Traffic Safety Study and the possible implementation of traffic calming measures. (See Appendix B.)

Neighborhood leaders can consult with the City to determine the target area for the petition drive, but it is the Neighborhood that identifies the streets and street segments where the speeding is occurring. The Office of Neighborhoods can provide a print-out of the house numbers on the target streets.

For the process to move to the next step, the Petition must be signed by a simple majority of the households on the target street(s). Petition signatures may be reviewed and checked by City staff for validity.

Decision Point #1: More Than 50% Approve?

A petition signed by a majority of households demonstrates that the neighborhood organization or persons initiating this process have the support of their neighbors and that neighbors have been advised of potential solutions. It insures that organizers are working to involve affected neighbors at the outset. This outreach can also be the first step in helping raise awareness about speeding.

If the Petition is not returned within 120 days, or if the organizers fail to gain majority support for a study, then the Neighborhood can still utilize the basic tools of the Traffic Safety Education Toolbox (see Appendix C).

If more than fifty percent (50%) of eligible households request a Traffic Safety Study, then the Neighborhood and City can proceed to the next step.

D. Traffic Issues Meeting

Upon receipt of a valid Petition for a traffic safety study, the City will contact the neighborhood representative to arrange a follow-up "Traffic Issues Meeting" with neighborhood residents.

At this meeting, staff will seek further clarification from residents about the nature and extent of the problems and locations, as well as times of day the problems are occurring. In addition, neighbors will have an opportunity to identify causes and propose solutions.

Depending on the details gathered by City staff at the kick-off meeting, this Traffic Issues Meeting may not be necessary, but a meeting will be held if either the Neighborhood or the City believes it would be helpful to fully understand all of the issues, concerns, and traffic patterns before the City proceeds with a speed study.

E. Speed Data Collection and Evaluation

Following the Traffic Issues meeting, the City will gather information from 1) KPD's observations of speeding and traffic patterns, 2) speed and volume data generated by counting devices, and 3) the history of collisions on the target street(s).

Working together, KPD and Engineering will use their best judgment to determine whether speeding in the impact area exceeds acceptable levels. Their decision will be informed by input from the Neighborhood, by the assembled data, and by the score generated by this speed and volume formula:

Point Criteria Chart: Speeding	
Criteria	**Measurable Factor**
Speed	One point for each mph that the 85th percentile speed is over the regulated speed limit [(85th percentile speed – regulated speed limit) x __ pts]
Volume	One point for every 500 vehicles of daily traffic [ADT/500], with a maximum of four points.

Decision Point #2: Qualify for Enhanced Enforcement?

Based on results from the Traffic Safety Study, KPD will determine if the speeding warrants Enhanced Neighborhood Speed Enforcement. If so, KPD will proceed to work the target street(s) into the rotation.

Decision Point #3: Threshold Met for Concept Plan?

In addition, Engineering will determine if the project should proceed to the Concept Plan Stage. Neighborhoods not selected in the current year will be considered in the next round of projects. In some cases, depending on the degree of speeding and the number of potential projects with more significant speeding, the City may inform the Neighborhood that traffic calming measures are unlikely in the foreseeable future.

Some tools provided by Traffic Engineering may be available to neighborhoods even if they do not advance to the Concept Plan stage right away. These include speed limit signs, grooved rumble strips, allowance for on-street parking, and pavement markings. See Appendix E.

Education is an option whether or not a Neighborhood advances to the Concept Plan stage.

F. Speed Data Status Meeting

When the data collection and evaluation are complete, the City will notify the Neighborhood whether the Neighborhood qualifies for Enhanced Neighborhood Speed Enforcement and/or advancement to the Concept Plan stage. If requested, the City will hold a meeting with the Neighborhood to explain the results and next steps.

G. Development of Concept Plan

Utilizing all available data as well as input from neighbors, the Engineering Department will develop a concept plan which, in the best judgment of Traffic Engineering, will reduce speeding in the Neighborhood. The plan will recommend specific traffic calming measures in specific locations and, in limited cases, route modifications.

As part of this process, and in consultation with neighbors, the City may install temporary speed humps or other temporary physical devices to determine the impact of such devices on speeding and traffic patterns.

Based on traffic patterns in the area, the City may also elect to expand the impact area to include streets and street segments which may be affected by actions taken to mitigate the concerns expressed in the original Application. For example, adding traffic calming measures to a single street in a grid pattern neighborhood might simply move the problem to the parallel street, in which case a more comprehensive solution would be required.

Traffic Engineering will consult with the Fire Department, Police Department and Knoxville Area Transit to make sure that individual traffic calming measures do not interfere with emergency response or bus operations. For example, a decision on whether to install a neighborhood traffic circle might depend on room for a turning radius that would accommodate fire trucks.

H. Concept Plan Meeting

The concept plan will be presented to the Neighborhood at a Concept Plan Meeting. Staff will receive input and ideas from neighbors at the meeting. Revisions may be made by the City as a result of neighborhood feedback. Careful consideration will be given to those residents whose properties are immediately adjacent to proposed locations of traffic calming devices. More than one Concept Plan Meeting may be necessary to develop the final plan.

Decision Point #4: Advance to Detailed Design?

Determination of which qualified projects move from the Concept Plan stage to the Design Stage in any given year will be determined by the following factors:

- The severity of speeding on the target street(s)
- Volume (average daily traffic)
- History of collisions on the target street(s)
- The complexity of the project, staff time and available funding
- A fair and equitable distribution of projects across the City
- Whether previous installation of rumble strips and 25 mph speed limit signs failed to slow traffic significantly
- The number of years the project has waited for final design and funding
- The degree to which the project is partially or wholly funded by the applicant/neighborhood residents, thereby freeing up funds for other projects funded totally by the City

Projects that receive a lower ranking will be held back and ranked in the next round of projects. A project that does not receive funding after three years on the waiting list may undergo additional review and analysis to make sure that conditions have not changed and that the proposed Engineering solutions are still appropriate.

Projects with a high ranking move on to the Design Stage.

I. Detailed Design

Traffic Engineering will perform detailed design work on highly ranked projects with Concept Plans that have been fully vetted with the Neighborhoods. The projects will be designed according to standard City procedures, generally conforming to practices set forth by the Institute of Transportation Engineers.

J. Bidding and Construction

The number of designed projects that enter the bidding and construction phase will depend on the NTSP budget each year. Construction by a contractor and inspection by city staff will follow standard City procedures.

K. Post-Construction Evaluation

Following installation of traffic calming measures, Traffic Engineering will conduct one or more follow-up evaluations to determine the effectiveness of the measures and identify the cause of any problems. Depending on the results, additional action may be required.

If the physical measures have resulted in unforeseen and unacceptable impacts, Traffic Engineering may remove or modify the devices following consultation with the Neighborhood. Such removal or modification generally would not occur until at least one full year following installation, but the timing is at the discretion of Traffic Engineering.

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Appendix A

Application for a Neighborhood Traffic Safety Study

Neighborhood Traffic Safety Program

* * * * * **Request from a Neighborhood Organization** * * * * *

Organization Name _____

Mailing Address _____

_____

Contact Person _____

Position with the Organization_____

Phone _____ Email _____

This application must be approved by a vote of the organization's board of directors or membership. Has such approval been obtained? YES ___ NO ___

* * * * * **Request from Individuals** * * * * *

We three unrelated individuals, representing three separate households, request a Neighborhood Traffic Safety Study in our area. We have discussed this application with the neighborhood organization representing our area (if there is one).

Contact Person _____

Address _____ Phone _____

Email _____

♦ ♦

Name _____

Address _____ Phone _____

Email _____

♦ ♦

Name _____

Address _____ Phone _____

Email _____

* * * * * **Target Area** * * * * *

Please list the street(s) where speeding is occurring, as well as the street classification. Applicants may list local streets — those not listed in the Major Road Plan for the City of Knoxville and Knox County. Minor collectors, which are listed in the Major Road Plan, will also be considered.

In some cases, speeding may be a problem on just one street segment. A street segment is defined as one or more blocks of the problem street between two cross streets. For example, the problem street might be Maple Street between Oak Avenue and Elm Street.

Problem Street _____ Classification _____

BETWEEN _____ AND _____

Problem Street _____ Classification _____

BETWEEN _____ AND _____

Problem Street _____ Classification _____

BETWEEN _____ AND _____

Problem Street _____ Classification _____

BETWEEN _____ AND _____

Describe the problem. For example, is the speeding occurring just at rush hour or at other times of the day as well? Use additional sheet and/or a map if necessary.

List any specific factors that you believe the City should consider when ranking this speeding problem alongside others in the city. For example, you could mention proximity to a school, lack of sidewalks, a blind hill, and other considerations that make the speeding more of a concern for your neighborhood. Use additional page if necessary.

* * * * * **Outreach to Neighbors** * * * * *

We understand that our neighbors have the right to be informed of any public meetings held with City officials in connection with this Application for the Neighborhood Traffic Safety Program (NTSP). To partner with the City, we promise to take responsibility for informing our neighbors about the date, time and place of these meetings and about the NTSP. We understand that we will have an opportunity to work with the City to determine the residential area that needs to be targeted for this purpose.

Signed by the **Contact Person** for Your Group:

Signature: _____

Print Name: _____

Date: _____

Please submit this application to traffic.calming@knoxvilletn.gov or by postal mail to David Massey, Office of Neighborhoods, City of Knoxville, P.O. Box 1631, Knoxville TN 37902. Questions should be directed to Steve King at 215-6103 or sking@knoxvilletn.gov.

Appendix B

Sample Petition

Draft Petition – Not For Use – Subject to Change

Neighborhood Traffic Safety Program

We, the undersigned residents of _____ (street name), are concerned about excessive speeding on our street. **We request that the City of Knoxville conduct a Neighborhood Traffic Safety Study** to determine if the speeding is severe enough to justify possible traffic calming measures in our neighborhood.

We understand that:

- "Traffic calming measures" may include physical devices (such as neighborhood traffic circles and speed humps) and/or route modifications (such as partial street closures and making a street one-way).
- The City may install traffic calming if the evidence shows such measures are the only effective means for reducing speeding that endangers public safety.
- The City would not take these steps without public neighborhood meetings and opportunities for citizen input on the traffic calming plan for our neighborhood.

Print Name	Phone
Street Address	
Email	
Signature	

Print Name	Phone
Street Address	
Email	
Signature	

Print Name	Phone
Street Address	
Email	
Signature	

Please provide your phone and email so that you can be notified of neighborhood meetings about speeding and traffic calming. City may spot-check to verify signatures.

Appendix C

Traffic Safety Education Toolbox

Neighborhood Traffic Safety Program

The City of Knoxville is developing a series of tools that Neighborhoods can use in neighborhood-centric education campaigns to persuade drivers to reduce speeds. Basic tools are available to all neighborhoods, whereas advanced tools are available to neighborhoods that advance to a certain level in the Program.

Toolbox Item	Basic Level	Advanced Level
NTSP Brochure	Provided by the City	Provided by the City
Online Tools • Includes templates for brochures, articles, fliers, personalized letters etc. that can be modified by Neighborhood for its needs. • Neighborhood responsible for printing. • Suggestions & caveats for high visibility activities such as human billboarding, use of pacer cars, and neighborhood bike rides. • Attitude survey aimed at n'hood residents. • Links to various online resources. • Tips on approaching neighbors, holding meetings, mounting an education campaign.	√	√
Brochures • Select number of brochures printed in bulk by the City. • Brochures target specific groups, e.g. teen drivers.	Provided at full cost to the Neighborhood	Provided at half cost to the Neighborhood
Bumper Stickers • Messages and Designs to be determined.	Provided at full cost to the Neighborhood	Provided at half cost to the Neighborhood
Yard Signs • City provides 3-5 signs for each major entrance into the problem areas of the neighborhood. • Neighborhood responsible for upkeep, placement, and permission of property owner. • Signs are political style signs (corrugated plastic with wire anchors). • Messages and designs to be determined. • Placement cannot be in the right-of-way and must be temporary to comply with sign ordinance.	Provided at full cost to the Neighborhood	Provided at half cost to the Neighborhood
Radar Display Units • Unit records speed and other data. • Displays driver's speed and/or a message. • Best deployed in conjunction with a neighborhood education campaign.	n/a	Deployed as available for a limited period of time.

Appendix D

Traffic Calming Toolbox

Neighborhood Traffic Safety Program

Under the Neighborhood Traffic Safety Program, the City of Knoxville will consider using any of the four measures investigated and approved by the Institute of Traffic Engineers (ITE) — vertical deflections, horizontal shifts, roadway narrowing, and roadway closures.

- Vertical deflections, horizontal shifts, and roadway narrowings are intended to reduce speed and enhance the street environment for non-motorists.

- Roadway Closures (diagonal diverters, half closures, full closures, and median barriers) are intended to reduce cut-through traffic by obstructing traffic movements in one or more directions.

Here is ITE's description of these measures. Visit http://www.ite.org/traffic/tcdevices.asp for photos and diagrams, along with an overview of how these measures are deployed, design and installation issues, potential impacts, emergency response issues, and cost. (Note that the cost estimates may be low in 2016 dollars.)

1. Vertical Deflections

A. Speed Humps

- rounded raised areas of pavement typically 12 to 14 feet in length
- often placed in a series (typically spaced 300 to 600 feet apart)
- sometimes called road humps or undulations

B. Speed Tables

- long raised speed humps with a flat section in the middle and ramps on the ends; sometimes constructed with brick or other textured materials on the flat section
- sometimes called flat top speed humps, trapezoidal humps, speed platforms, raised crosswalks, or raised crossings

C. Raised Intersections

- flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section and ramps
- sometimes called raised junctions, intersection humps, or plateaus

2. Horizontal Shifts

A. Neighborhood Traffic Circle

- raised islands, placed in intersections, around which traffic circulates
- motorists yield to motorists already in the intersection
- require drivers to slow to a speed that allows them to comfortably maneuver around them
- sometimes called intersection islands
- different from roundabouts

B. Chicanes

- a series of narrowings or curb extensions that alternate from one side of the street to the other forming S-shaped curves
- also called deviations, serpentines, reversing curves, twists, and staggerings

3. Roadway Narrowings

A. Choker

- curb extensions at midblock or intersection corners that narrow a street by extending the sidewalk or widening the planting strip
- can leave the cross section with two narrow lanes or with a single lane
- at midblock, sometimes called parallel chokers, angled chokers, twisted chokers, angle points, pinch points, or midblock narrowings
- at intersections, sometimes called neckdowns, bulbouts, knuckles, or corner bulges
- if marked as a crosswalk, they are also called safe crosses

B. Center Island Narrowing

- raised islands located along the centerline of a street that narrow the travel lanes at that location
- sometimes called midblock medians, median slow points, or median chokers

4. Roadway Closures

- Closures are typically applied only after other measures have failed or been determined to be inappropriate.
- For all types of closures, provisions are available to make diverters passable for pedestrians and bicyclists.
- Often used in sets to make travel through neighborhoods more circuitous — typically staggered internally in a neighborhood, which leaves through movement possible but less attractive than alternative (external) routes.
- Closures have been used as a crime prevention tool.

Here are the different types of closures:

Diagonal diverters are barriers placed diagonally across an intersection, blocking through movement; they are sometimes called full diverters or diagonal road closures.

Half closures are barriers that block travel in one direction for a short distance on otherwise two-way streets; they are sometimes called partial closures, entrance barriers, or one-way closures (when two half-closures are placed across from one another at an intersection, the result is a semi-diverter).

Full-street closures are barriers placed across a street to completely close the street to through-traffic, usually leaving only sidewalks open; they are sometimes called cul-de-sacs or dead-ends.

Median barriers are raised islands in the centerline of a street and continuing through an intersection that block the left turn movement from all intersection approaches and the through movement at the cross street.

CITY OF KNOXVILLE

Appendix E

Other Engineering Tools

Neighborhood Traffic Safety Program

Following the Neighborhood Traffic Safety Study, some Neighborhoods will not advance immediately to the Concept Plan stage. How fast and how far they advance in the process will depend on the severity of speeding on their streets and the number of NTSP applicants, along with program funding and staff levels. In the meantime, the following tools may be available to these neighborhoods.

- Speed Limit Signs
  - By ordinance, residential speed limit is 30 mph unless otherwise posted.
  - City can install 25 mph signs on most residential streets.
  - Much of this work already done but some streets may remain unsigned.

- Rumble Strips
  - Used to get a driver's attention entering a neighborhood or approaching a stop sign.
  - Grooved into pavement / can be noisy for nearby homes.
  - Glued-down strips did not work and will not be used.
  - Can be deployed in conjunction with new or larger 25 mph speed limit sign.

- On-Street Parking
  - Boost on-street parking to one or both sides to "narrow" the street, encouraging drivers to slow down.
  - Requires resident buy-in and city approval.
  - May include striping to indicate parking areas

- Pavement Markings
  - 25 MPH or other warnings are painted directly on the street.
  - Striping for bike lanes — if the pavement is wide enough and if a new bike lane would create useful connections to planned or existing bike facilities or bike traffic generators.

CITY OF KNOXVILLE

Appendix F

Frequently Asked Questions (FAQ)

Neighborhood Traffic Safety Program

1. Why is this program confined to local streets and minor collectors? Why not major collectors and arterials as well?

There is no question that speeding is a problem on major collectors and arterials, and that such roads are in residential areas. However, there are several reasons this program is confined to local streets and minor collectors located within neighborhoods:

First, we have a very large unmet need to slow speeding on local streets and minor collectors in the interior of neighborhoods. It makes sense to tackle these needs first. Generally, projects on these streets will be more cost effective, and therefore more projects can be designed and built in more neighborhoods.

Second, by their nature, major collectors and arterials are part of a larger network of roads. The impact of traffic calming measures placed on major collectors and arterials is harder to predict.

Third, traffic calming treatments for the larger-volume streets are more complex and more costly to design, plan, engineer and construct.

Finally, traffic calming devices and street modifications have a measurable impact on emergency response time. On local streets, this impact can be measured in seconds and affects fewer citizens. But on major collectors and arterials, this impact can be significant, affecting more people and making the impediments harder to justify.

2. Who determines street classification?

In order to provide clear guidance on which streets are and are not eligible for the NTSP, the City chose to rely on our community's road classification system, because the classifications are readily available to the general public.

The Metropolitan Planning Commission (MPC) — in consultation with the city and county engineering departments — determines street classifications as part of its overall responsibility for maintaining the "Major Road Plan for the City of Knoxville and Knox County." The plan was last updated in 2011 and can be found on the MPC web site here: http://archive.knoxmpc.org/zoning/Major_Road_Plan.pdf.

The main purpose for the Major Road Plan is to determine right-of-way dedication requirements, which are generally based on roadway classification. For example, a greater right-of-way width will typically be required for an Arterial than a Collector roadway. The Major Road Plan also includes information about specific future improvements and new roadway connections (where identified in transportation plans)

so that appropriate rights-of-way can be preserved. Road classification can also be a determining factor in certain zoning matters.

MPC has no set timetable for reviewing classifications.

3. Why can't the City install stop signs to reduce speeding?

Stop signs function to regulate traffic flow and traffic interaction. They do not control speed.

Stop signs — as well as traffic lights — are installed based on criteria developed by the Federal Highway Administration. These criteria are called "warrants," which are benchmarks for the number of vehicles traveling on the main street and side streets. Other warrants include the proximity of schools and pedestrians, as well as the history of crashes preventable by stop signs or traffic lights. These warrants have been adopted by the State of Tennessee and have the force of law.

Engineering studies have shown that motorists over time tend to ignore unwarranted signs, increasing the risk of collisions and doing little or nothing to reduce speed.

Consider, for example, a 4-way stop installed at an intersection where one street is very busy and the cross street has very little traffic. Motorists who regularly travel the busy street will learn there is usually no cross traffic, and some motorists will tend to roll through the stop sign or ignore it altogether. A driver on the lightly traveled street may trust the stop sign, only to be broadsided by the cross-street driver who believes there is no reason to stop.

If a stop sign is not warranted, the Engineering Department will not recommend it. Some sign requests do result in new signs, but for other reasons. If no sign is warranted, the Department will still investigate to see if other solutions might address the problem.

4. How long will it take for our Neighborhood to get traffic calming measures?

Since this is a brand new program, with a lot of backlog demand, the timing is hard to predict. How quickly a Neighborhood and the City are able to bring a project to a conclusion depends on the number of applicants, the time required to schedule and advertise neighborhood meetings, how quickly a Neighborhood can gather required petition signatures, how many neighborhoods qualify for the development of a concept plan, the complexity of any identified traffic calming solutions, limitations on staff time and funding, and perhaps other factors.

Without any undue delays or waiting in line, the City anticipates that it would take 12-18 months to complete a project, starting with the Kick-off Meeting and ending with the completion of construction.

Recognize, however, that many Neighborhoods will not qualify for traffic calming measures in the near term, if ever, and so their waiting period will be longer.

5. How much money is budgeted for this program?

The FY 2018 capital budget — this excludes staff time — earmarked $100,000 in the capital budget for traffic calming. This figure is based, in part, on the fact that there is already $450,000 set aside for traffic calming. Thus the initial budget is about $550,000. The annual allocation may be changed in future years based on need, the success of the program, competing needs, and other factors.

6. How many traffic calming projects will the City be able to install in any one year?

Some traffic calming projects can cost $100,000 or more in a single neighborhood. Others may cost a lot less. The City's best estimate at this time is that four to six traffic calming construction projects can be completed annually.

Because of the time required to verify speeding, determine the feasibility of traffic calming measures, develop a concept plan and create detailed engineering design drawings, the first construction projects are not likely to occur before 2018.

7. How are speed limits established?

Speed limits on local (neighborhood) streets are established by City ordinance (Section 17-262 in the City Code of Ordinances). The current limit is 30 miles per hour. Traffic Engineering has the discretion to consider requests to reduce the speed limit to 25 miles per hour. This can be done only after a speed study justifies the reduction.

Speed limits on larger streets (collectors and above) are established by street design or by speed studies. In a speed study, the City surveys traffic characteristics such as speed using specialized equipment such as stationary radar detectors. The data are analyzed by traffic technicians, and then Traffic Engineering sets the speed limit.

8. What is the 85th percentile speed, how is it calculated, and how is it used?

The 85th percentile speed is the speed that 85% of drivers do not exceed. In other words, 15% of drivers will exceed this speed, and 85% of vehicles will travel at or below this speed.

Across the country, municipalities generally use the 85th percentile speed (as measured by specialized equipment) as the basis for setting the speed limit, on the theory that most drivers behave in a safe and prudent manner, do not drive at excessive speeds, and wish to avoid crashes.

In addition to the 85th percentile speed, Traffic Engineering also takes into account roadway design, adjacent land uses, accident history, and other data when setting the speed limit on a particular road.

In the Neighborhood Traffic Safety Program, the 85th percentile speed is also used as a basis for determining excess speed.

9. Why doesn't the City increase speeding fines?

The Tennessee State Constitution establishes the limit on how much local jurisdictions can fine citizens for misdemeanor offenses. That limit is $50 per violation.

10. What are the pros and cons of traffic calming measures?

Benefits of Traffic Calming:

- Reduces speeds.
- May reduce volume.
- Reduces collision frequency and severity.
- Increases the safety of pedestrians and bicyclists.
- Increases the perception of safety for pedestrians and bicyclists.
- Enhances the street environment (streetscape).
- May reduce cut-through vehicular traffic.
- Increases quality of life.
- Reduces the negative impacts of vehicles on the environment and the neighborhood.
- Reduces the need for police enforcement in areas where physical traffic calming devices have been implemented, allowing enforcement to be targeted to other areas.

Disadvantages of Traffic Calming:

- Slight increase in emergency response time on local streets and minor collectors.
- Snow removal is more difficult and time consuming.
- Installation cost.
- Additional signs and lighting may be required.
- Increased maintenance, especially where landscaping is included.
- Annoying to some residents (noise and inconvenience).
- Some treatments can impact resident access points into and out of the neighborhood.
- Some drivers may damage shock absorbers and struts on their vehicles if they repeatedly drive over speed humps at excessive speed.
- Some treatments (e.g. speed humps) may be considered unsightly.

CITY OF KNOXVILLE

Appendix G

GLOSSARY

Neighborhood Traffic Safety Program

For definitions and descriptions of individual traffic calming measures (chicanes, speed humps, traffic circles, etc.), see Appendix D "Traffic Calming Toolbox."

85th Percentile Speed — the speed at or below which 85% of all vehicles are observed to travel under free flowing conditions past a certain point.

Average Daily Traffic (ADT) — the total two-way traffic volume (number of vehicles) on a roadway for some period of time, divided by the total number of days during that period.

Concept Plan — a map showing the proximate location of traffic calming devices and/or roadway modifications, along with a description of these measures and their anticipated impact on vehicular traffic.

Education — One of the three E's of neighborhood traffic safety, Education refers to efforts to persuade drivers to drive at reasonable and rational speeds. See Appendix A.

Enforcement — One of the three E's of neighborhood traffic safety, Enforcement involves police stake-out of a street to enforce traffic laws, including speed limits.

Engineering — One of the three E's of neighborhood traffic safety, Engineering refers to traffic calming measures, including a range of physical traffic calming devices as well as roadway modifications. See Appendix B.

Neighborhood — For purposes of this NTSP, a Neighborhood (capitalized) is defined as an established neighborhood organization registered with the City's Office of Neighborhoods or a residential neighborhood with no neighborhood organization.

Neighborhood Traffic Safety Study — This study consists of an analysis of driver behavior, speeding, volume of cars (average daily traffic), and traffic patterns to determine if a street or set of streets should be considered for a possible concept plan for traffic calming treatments.

NTSP — Neighborhood Traffic Safety Program.

Route Modification — a change affecting the way traffic moves along a roadway; can include physical impediments such as a partial street closure (blocking motorized vehicles but not pedestrians and bicycles) or signage such as one-way signs.

Traffic Calming — the use of physical measures and roadway modifications to reduce speeding in a residential neighborhood.

Traffic Engineering — the Traffic Engineering Division of the City of Knoxville's Engineering Department.